

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-50
Relating to Certification of New Heavy-Duty Motor Vehicle Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102, and 43103 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Orders G-45-3;

IT IS ORDERED AND RESOLVED: That the following Caterpillar Inc. 1988 model-year diesel engines are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating GVWR over 14,000 pounds.

| <u>Engine Family</u> | <u>Displacement Liters (Cubic Inches)</u> | <u>Exhaust Emission Control Systems (Special Features)</u> |
|----------------------|---|--|
| JCT0636EPB2 | 10.4 (636) | Engine Modification Smoke Puff Limiter (Diesel Injection - Direct) (Turbocharger) |
| JCT0636FPA4 | 10.4 (636) | Engine Modification Smoke Puff Limiter (Intercooler) (Turbocharger) (Diesel Injector - Direct) |

Engine models and codes are listed on attachments.

The following are the emission standards for these engine families:

| <u>Hydrocarbons gm/bhp-hr</u> | <u>Carbon Monoxide gm/bhp-hr</u> | <u>Nitrogen Oxides gm/bhp-hr</u> | <u>Particulates gm/bhp-hr</u> |
|-----------------------------------|--|--------------------------------------|-----------------------------------|
| 1.3 | 15.5 | 6.0 | 0.60 |

The following are the certification emission values for these engine families:

| <u>Engine Family</u> | <u>Hydrocarbons gm/bhp-hr</u> | <u>Carbon Monoxide gm/bhp-hr</u> | <u>Nitrogen Oxides gm/bhp-hr</u> | <u>Particulates gm/bhp-hr</u> |
|----------------------|-----------------------------------|--|--------------------------------------|-----------------------------------|
| JCT0636EPB2 | 1.2 | 2.5 | 5.4 | 0.60 |
| JCT0636FPA4 | 1.2 | 2.7 | 4.4 | 0.60 |

CATERPILLAR, INC.

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BE IT FURTHER RESOLVED: That the Executive Officer has been provided all material required to demonstrate certification compliance with the Board's emission control system warranty regulations (Title 13, California Administrative Code, Section 2036).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this order and attachment.

Executed at El Monte, California this 10th day of December, 1987.



K. D. Drachand, Chief
Mobile Source Division

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Inc. Engine Family JCT0636EPB2 Codes A and B
 Evaporative Family NA Engine Type V8
 Liters (CID) 10.4 (636)

ABBREVIATIONS

| <u>Ignition System</u> | <u>Exhaust Emissions Control System</u> | <u>Special Features</u> |
|--|--|---|
| CA -Centrifugal Advance | AIP -Air Injection-Pump | CCV -Combustion Chamber Valve |
| ECU -Electronic Control Unit | AIV -Air Injection-Valve | CFI -Central Fuel Injection or Throttle Body Injection |
| EI -Electronic Ignition | DBC -Dual Bed Catalyst | DID -Diesel Injection-Direct |
| ESAC-Electronic Spark Advance Control | EGR -Exhaust Gas Recirculation | DIP -Diesel Injection- Prechamber |
| VA -Vacuum Advance | EIC -Electronic Injection Control | EFI -Electronic Fuel Injection |
| VR -Vacuum Retard | EM -Engine Modification | IC -Intercooler or Aftercooler |
| | OC -Oxidation Catalyst | MFI -Mechanical Fuel Injection |
| | OS -Oxygen Sensor | OBD -On-Board Diagnostics |
| | HOS -Heated Oxygen Sensor | TC -Turbocharger |
| | SPL -Smoke Puff Limiter or Throttle Delay | |
| | TOC -Trap Oxidizer, Continual | |
| | TOP -Trap Oxidizer, Periodical | |
| | TWC -Three-Way Catalyst | |
| | WUOC -Warm-Up Oxidation Catalyst | |
| | WUTWC-Warm-Up Three-Way Catalyst | |

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV-nVenturi Carburetor

VEHICLE MODELS:

Engine: Front _____ Mid. _____ Rear _____
 Drive: FWD _____ RWD _____ 4WD Full Time _____ 4WD Part Time _____

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family JCT0636EPB2 Codes A and B
 Liter (CID) 10.4 (636) Engine Type V8
 Emission Control Sys. and (Special Features) EM, SPL (DID, TC)

| Engine Model | Fuel Injection Pump Manufacturer Part Number | Injector Manufacturer Part Number | Maximum Rated hp at rpm | Fuel Rate mm ³ /stroke (lbs/hr) | Maximum Rated Torque at RPM | Fuel Rate mm ³ /stroke (lbs/hr) |
|--------------------|--|---|-------------------------------|--|--------------------------------------|--|
| 3208 DIT Code A | *Caterpillar 7C8970 or 9Y4547 | Caterpillar 4W7016 | 225 @ 2600 | 75 (87.5) | 600 @ 1400 | 87 (54.6) |
| | | | 210 @ 2600 | 68 (79.3) | 560 @ 1400 | 80 (50.2) |
| Code B | *Caterpillar 9Y0592 | Caterpillar 4W7016 | 240 @ 2200 | 90 (88.8) | 680 @ 1500 | 105 (70.7) |
| | | | 225 @ 2200 | 84 (82.6) | 635 @ 1500 | 94 (63.2) |
| | | | 215 @ 2200 | 79 (78.4) | 600 @ 1400 | 88 (55.3) |
| | | | 175 @ 2200 | 65 (64.2) | 500 @ 1400 | 72 (45.2) |
| | | | 240 @ 2100 | 93 (87.6) | 700 @ 1500 | 108 (72.8) |
| | | | 230 @ 2100 | 90 (84.5) | 664 @ 1500 | 99 (66.5) |
| | | | 200 @ 2000 | 79 (70.9) | 620 @ 1400 | 92 (57.6) |

*Basic Fuel Pump 7C8930 (Reference Page No. 16.05.01-0636EPB-1).

Date of Issue 09 NOV 87 Revisions:

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

Manufacturer Caterpillar Inc. Engine Family JCT0636FPA4 Codes A and B
 Evaporative Family NA Engine Type V8
 Liters (CID) 10.4 (636)

ABBREVIATIONS

| <u>Ignition System</u> | <u>Exhaust Emissions Control System</u> | <u>Special Features</u> |
|---------------------------------------|---|--|
| CA -Centrifugal Advance | AIP -Air Injection-Pump | CCV -Combustion Chamber Valve |
| ECU -Electronic Control Unit | AIV -Air Injection-Valve | CFI -Central Fuel Injection or Throttle Body Injection |
| EI -Electronic Ignition | DBC -Dual Bed Catalyst | DID -Diesel Injection-Direct |
| ESAC-Electronic Spark Advance Control | EGR -Exhaust Gas Recirculation | DIP -Diesel Injection-Prechamber |
| VA -Vacuum Advance | EIC -Electronic Injection Control | EFI -Electronic Fuel Injection |
| VR -Vacuum Retard | EM -Engine Modification | IC -Intercooler or Aftercooler |
| | OC -Oxidation Catalyst | MFI -Mechanical Fuel Injection |
| | OS -Oxygen Sensor | OBD -On-Board Diagnostics |
| | HOS -Heated Oxygen Sensor | TC -Turbocharger |
| | SPL -Smoke Puff Limiter or Throttle Delay | |
| | TOC -Trap Oxidizer, Continual | |
| | TOP -Trap Oxidizer, Periodical | |
| | TWC -Three-Way Catalyst | |
| | WUOC -Warm-Up Oxidation Catalyst | |
| | WUTWC-Warm-Up Three-Way Catalyst | |

Fuel System

CFI, CL, DID, DIP, EFI, MFI
 nV-nVenturi Carburetor

VEHICLE MODELS:

Engine: Front _____ Mid. _____ Rear _____
 Drive: FWD _____ RWD _____ 4WD Full Time _____ 4WD Part Time _____

1988 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

Manufacturer Caterpillar Inc. Engine Family JCT0636FPA4 Codes A and B
 Liter (CID) 10.4 (636) Engine Type V8
 Emission Control Sys. and (Special Features) EM, SPL (IC, TC, DID)

| Engine Model | Fuel Injection Pump Manufacturer Part Number | Injector Manufacturer Part Number | Maximum Rated hp at rpm | Fuel Rate mm ³ /stroke (lbs/hr) | Maximum Rated Torque at RPM | Fuel Rate mm ³ /stroke (lbs/hr) |
|-----------------------|---|---|--|--|--|--|
| 3208T ATAAC Code A | *Caterpillar 7C8970 | Caterpillar 4W7016 | 300 @ 2800 275 @ 2600 | 95 (120.0) 87 (101.6) | 743 @ 1600 700 @ 1400 | 110 (79.1) 106 (66.4) |
| Code B | *Caterpillar 7C8968 | Caterpillar 4W7016 | 250 @ 2200 225 @ 2200 225 @ 2200 | 90 (88.7) 80 (79.0) 80 (79.0) | 715 @ 1500 680 @ 1400 630 @ 1400 | 108 (72.4) 103 (64.4) 93 (58.5) |

*Basic Fuel Pump 7C8930 (Reference Page No. 16.05.01-0636FPA-1).

Date of Issue 09 NOV 87 Revisions: